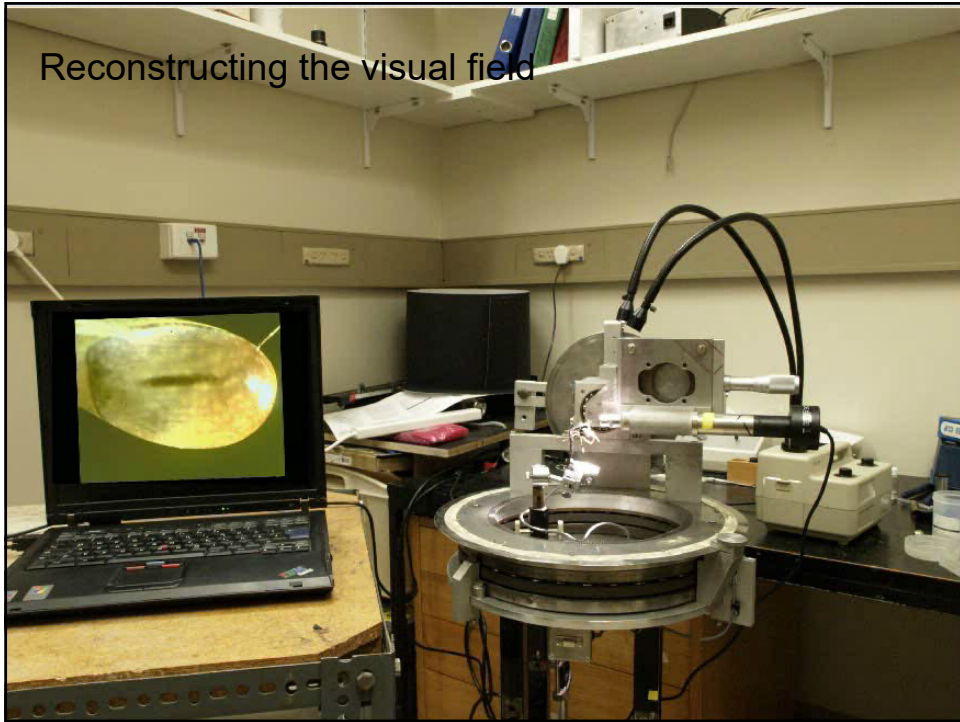


## Reconstructing the visual field

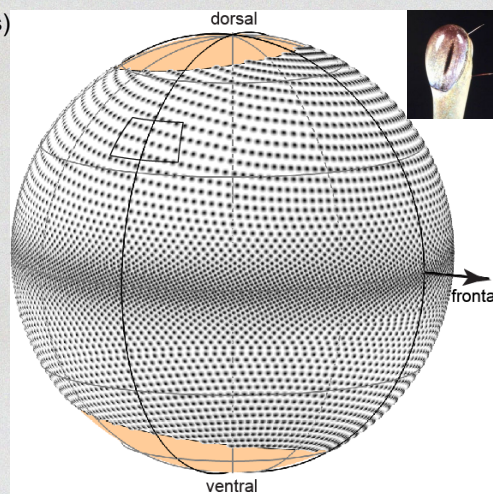


## Ommatidial distribution across visual space

*Uca vomeris*

8000 Ommatidia (pixels)

(Cheapest mobile phones  
 $\geq 1,000,000!$ )

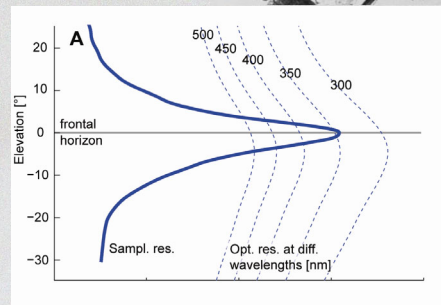




# The visual world of fiddler crabs

Equatorial acute zone (Visual streak)

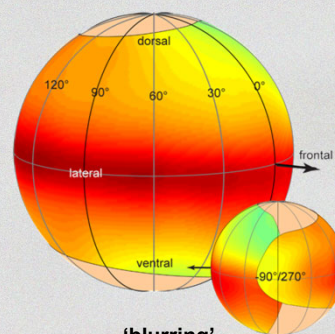
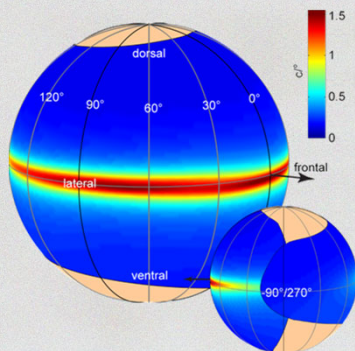
Another crab approaching on the ground is always seen by the same number of ommatidia!



After Zeil & Layne (2002); Smolka & Hemmi (2009)

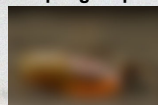
## Resolution across visual space *Uca vomeris*

'pixelation'  
Sampling resolution (vertical)



'blurring'  
Optical resolution

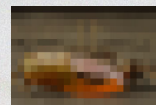
sampling > optical



Matched (both high)



"undersampling"  
optical > sampling



Smolka & Hemmi (2009)

## Sampling resolution in animals

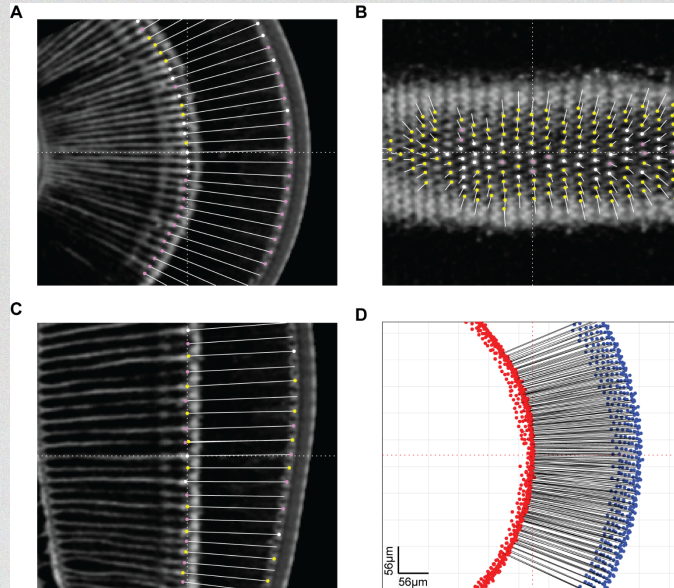


## Ommatidial distribution micro-CT scans

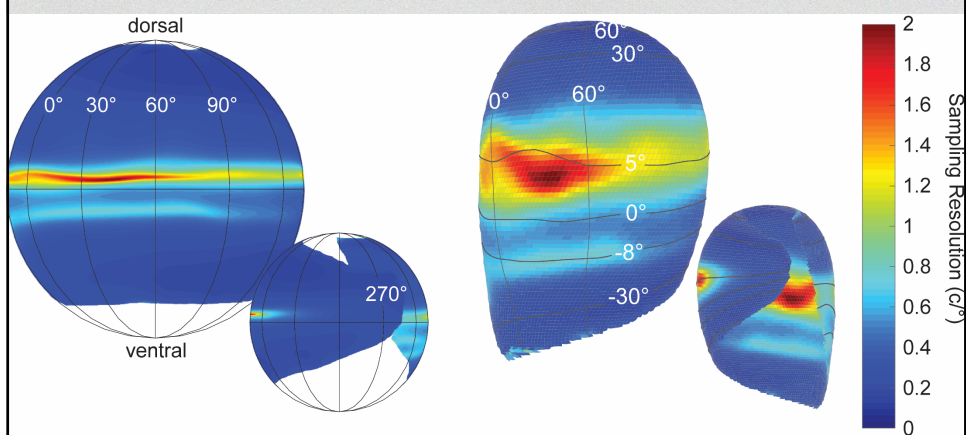




## Analysing micro-CT scans



## Resolution across visual space *Uca vomeris*

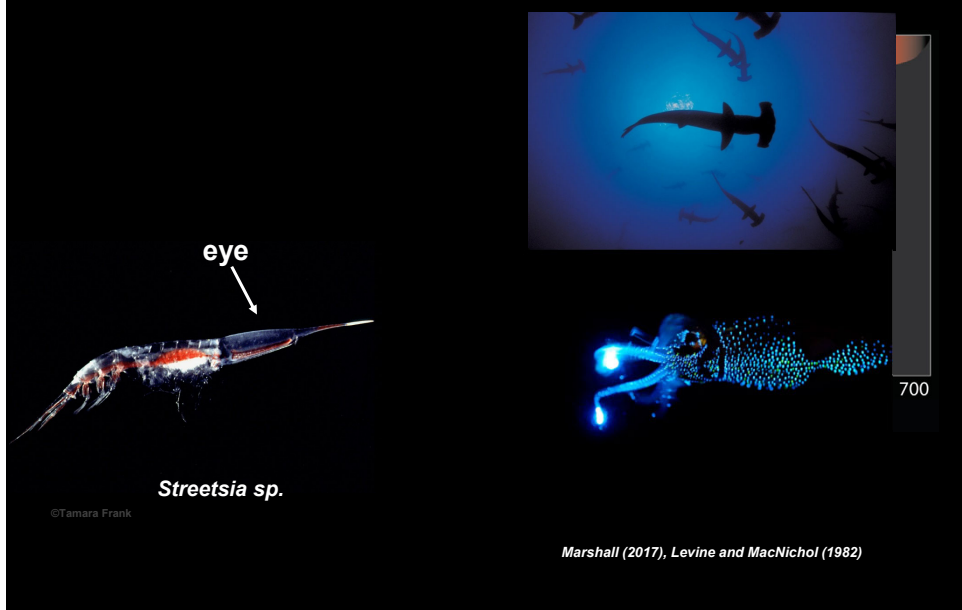


## Vision in deep-sea crustaceans:

Anna-Lee Jessop (PhD student)  
In collaboration with the  
Smithsonian National  
Museum of Natural  
History



## Hyperiid amphipods



# Sampling density in the field of view of *Streetsia*

